

T. C. ENTWISTLE.
Stop-Mechanisms for Warping-Machines.

No. 154,466.

Patented Aug. 25, 1874.

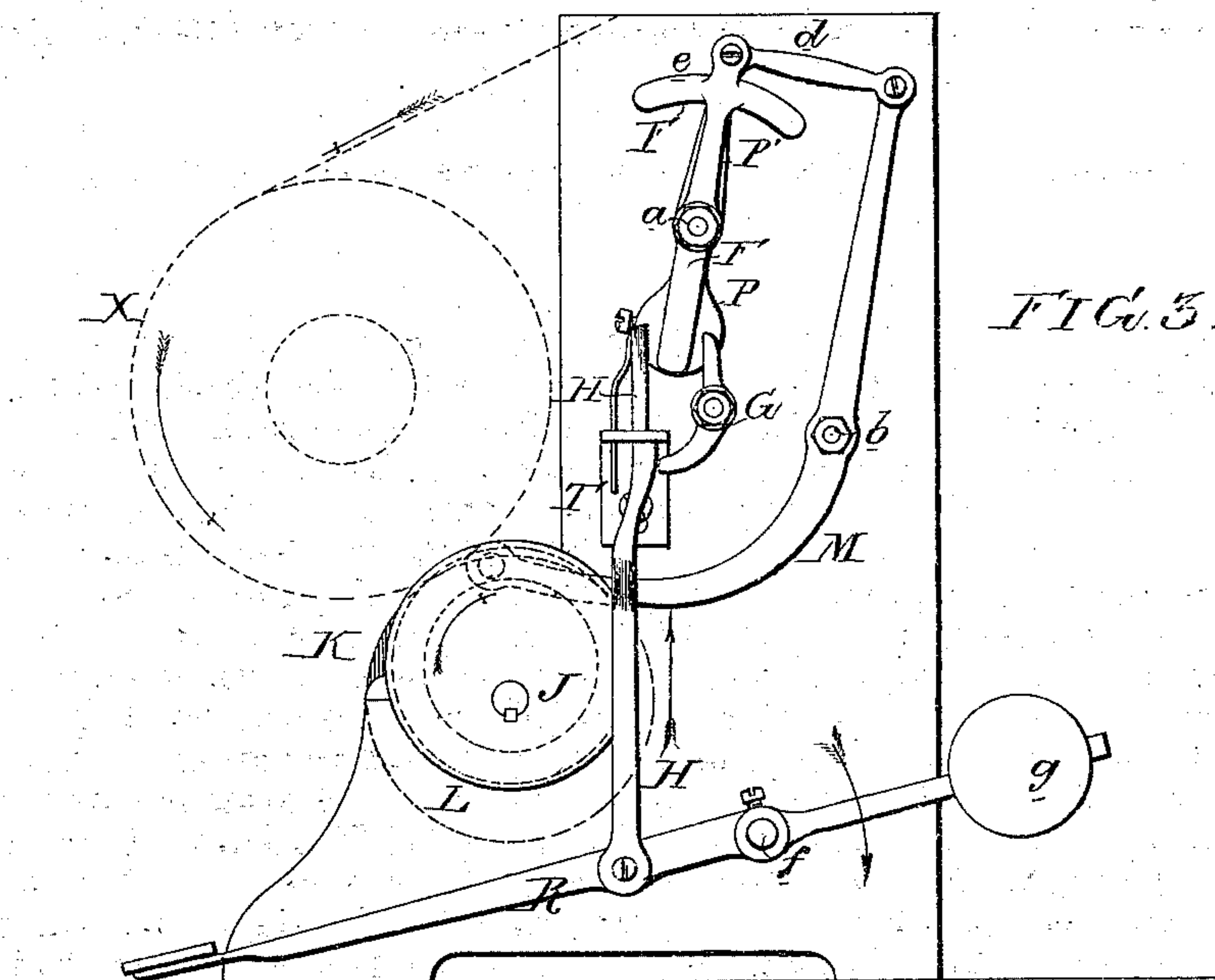


FIG. 3.

FIG. 1.

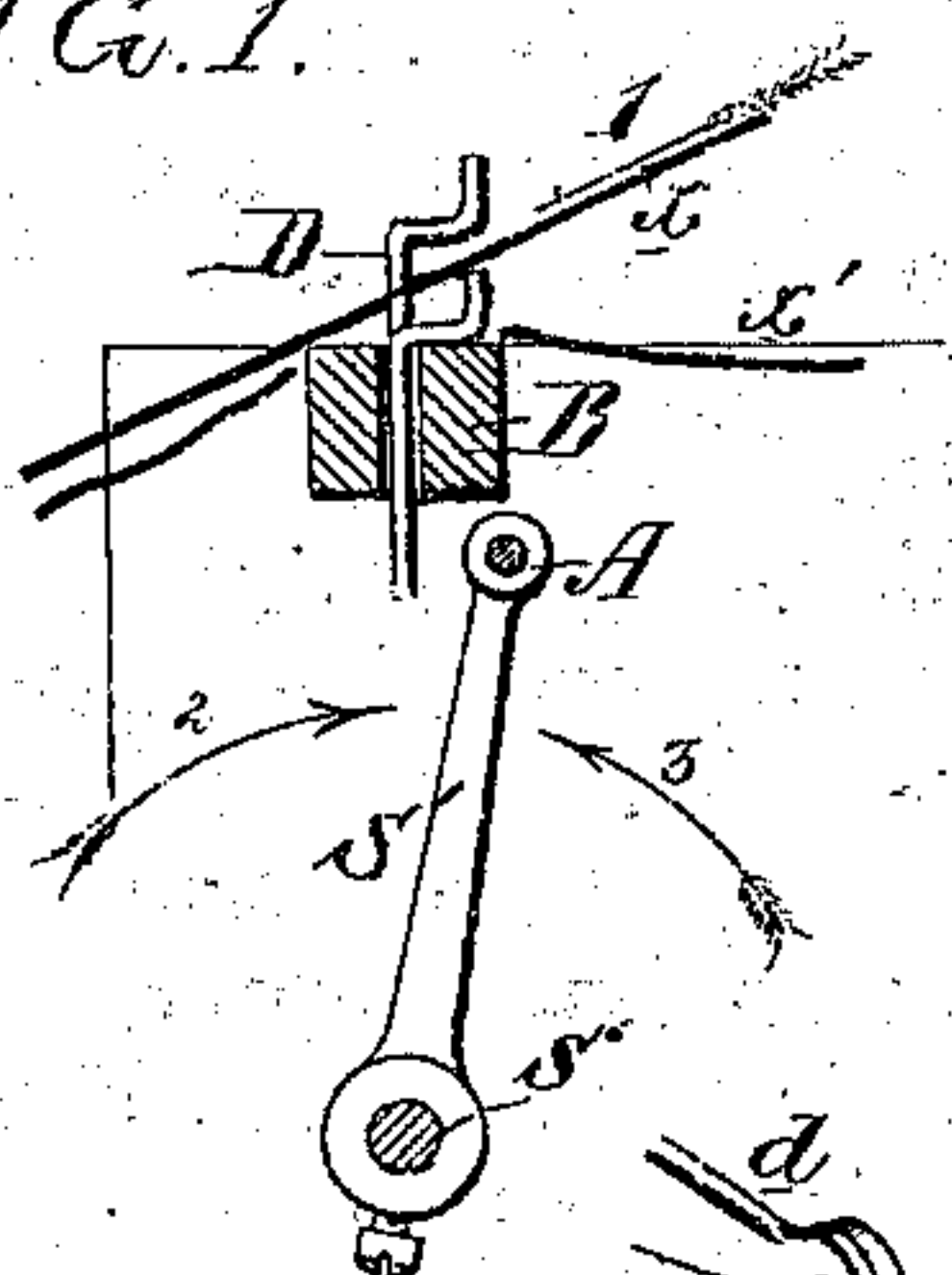


FIG. 4.

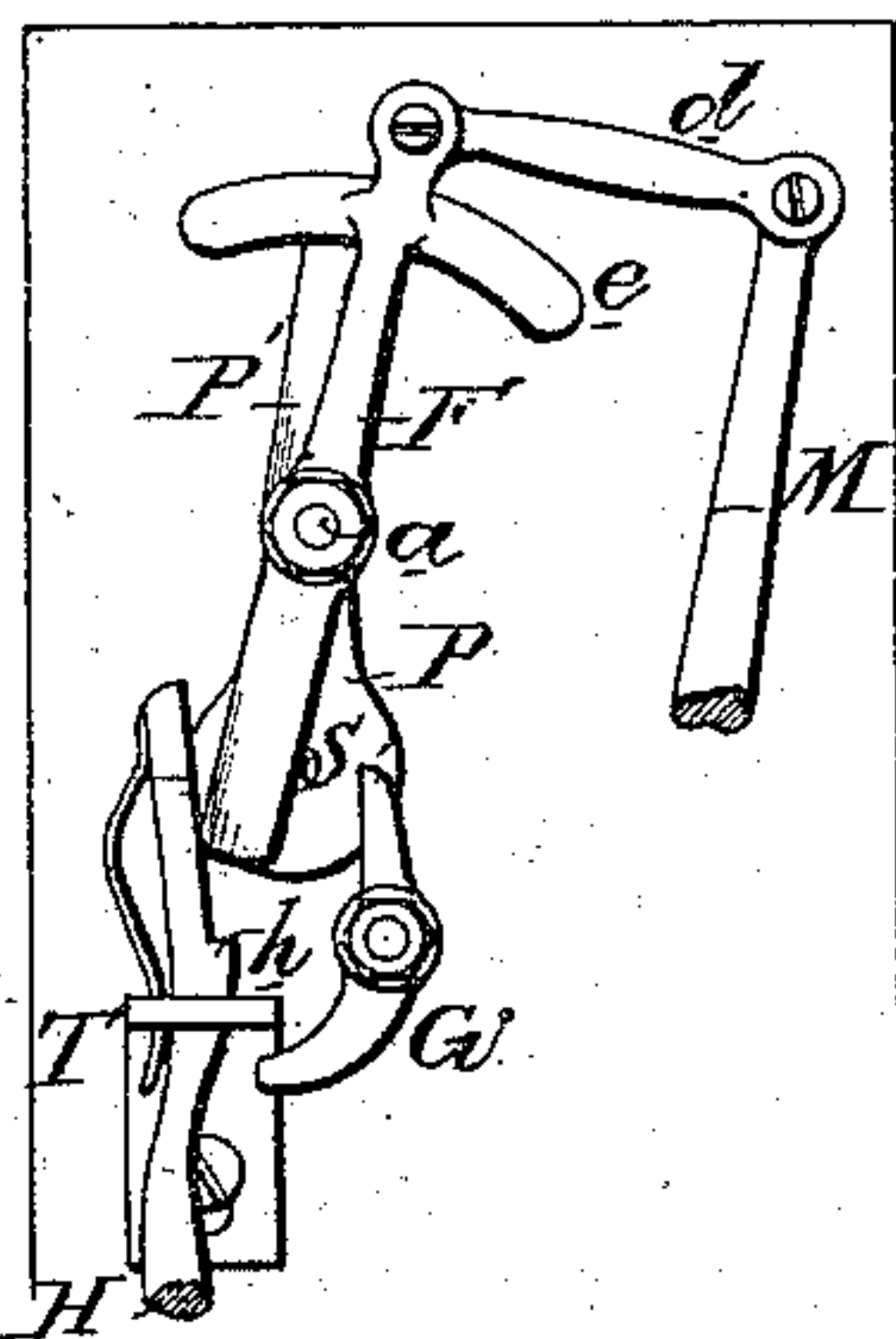


FIG. 2.

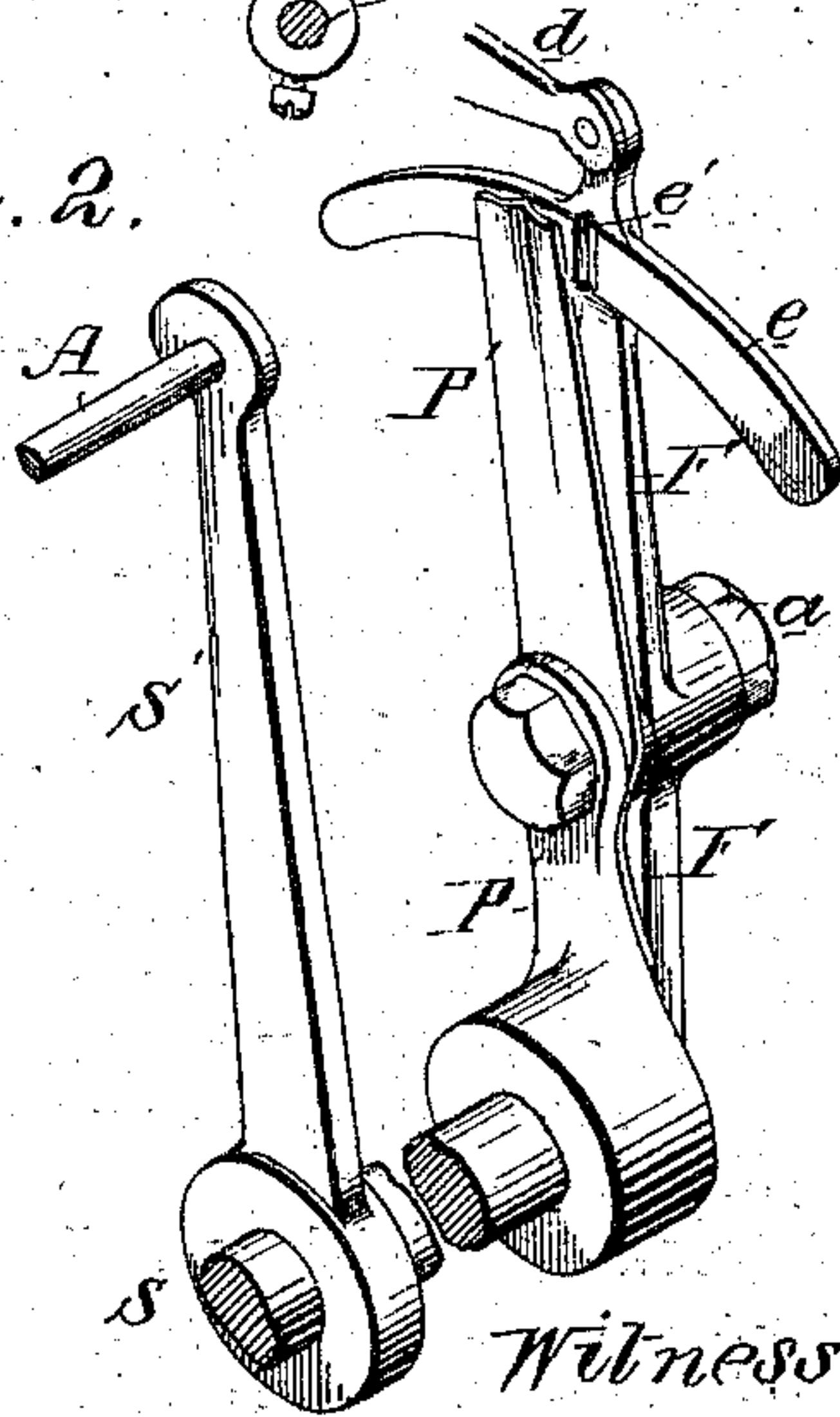
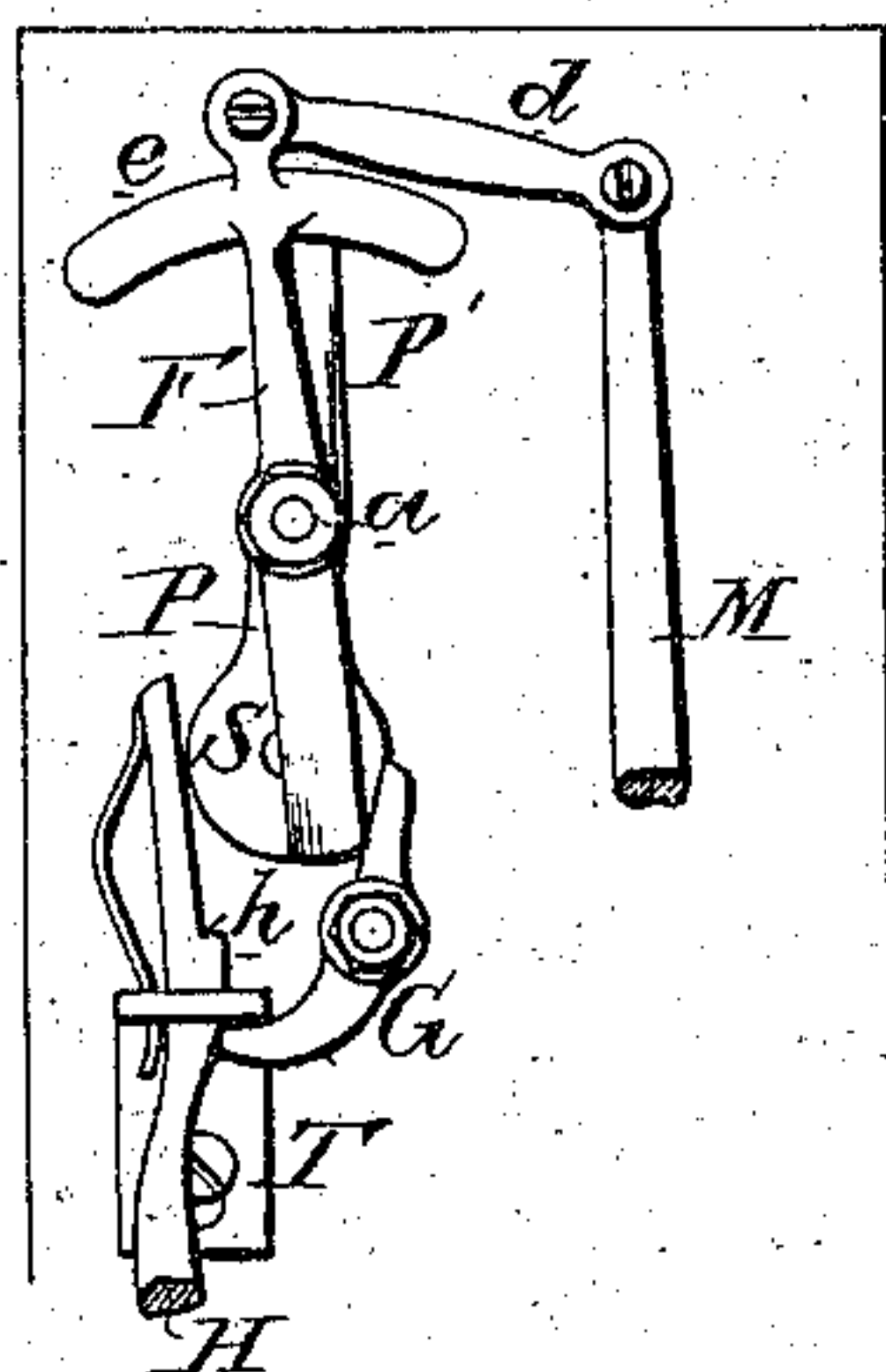


FIG. 5.



Witnesses, John K. Rupertus.
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By his Attys.
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THOMAS C. ENTWISTLE, OF LEWISTON, MAINE, ASSIGNOR TO HIMSELF AND PAUL WILSON, OF MAYNARD, MASSACHUSETTS.

IMPROVEMENT IN STOP MECHANISMS FOR WARPING-MACHINES.

Specification forming part of Letters Patent No. 154,466, dated August 25, 1874; application filed July 15, 1874.

To all whom it may concern :

Be it known that I, THOMAS C. ENTWISTLE, of Lewiston, Androscoggin county, Maine, have invented an Improved Stop-Motion for Warping-Machines, of which the following is a specification :

My invention relates to an improvement in warping or beaming machines, the object of the said improvement being to cause, through the medium of simple devices, the instantaneous stoppage of the machine by the breaking of any one of the threads or ends. This object I attain by causing a rod, A, (see Figures 1 and 2 of the accompanying drawing,) to oscillate freely when the machine is in operation beneath a bar, B, slotted for the reception of a number of wires, D, suspended from the threads x , which extend over the said bar in their passage from the spools to the warp-beam X. Should any one of these threads break, its wire drops into the path of and stops the movement of the oscillating rod A, this stoppage causing a lever, F, which previously vibrated upon the fulcrum S, to shift its fulcrum to the point a , and to thus strike a shipper-rod, H, Fig. 3, either directly or through the medium of a lever, G, which will have the effect of releasing the said shipper-rod, and of thus shifting the driving-belt onto a loose pulley, and stopping the movement of the driving-shaft J and warp-beam X. The suspended warp-beam X rests upon and is turned in the usual manner by a cylinder, K, on the driving-shaft J, and at one end of the latter is a cam-wheel, L, into the groove of which extends a pin or roller at one extremity of a lever, M, hung to the frame of the machine at the point b , and connected at its opposite extremity by a link, d , to the above-mentioned lever F, which has its fulcrum at a on the arm P of a rock-spindle, S, which extends across and has its bearings in the opposite side frame of the machine. This rock-shaft is also provided with two or more additional arms, S', which carry the above-mentioned oscillating rod A. On the lever F, near its upper extremity, is formed a segment, e , having a central notch, e' , into which, when the said lever is in line with the arm P, enters a spring-extension, P', of the

said arm. (See Figs. 2 and 3.) The lever F, except under the circumstances described hereafter, is thus prevented from turning independently of the arm P on its fulcrum a , and must vibrate on the fulcrum S with the said arm, forming, in effect, therefore, a part of the latter. A treadle-lever, R, is hung to the frame of the machine at f , and is acted on by a weight or spring, g , which tends to turn it in the direction of the arrow, Fig. 3; and to this lever is pivoted the lower extremity of a shipper-rod, H, which extends upward through a slot in a plate, T, secured to the frame of the machine, a shoulder, h , on the said rod being maintained in contact with the edge of the slot by the action of a spring, which prevents the elevation of the rod by the weighted treadle-lever. When the shipper-rod is thus depressed the driving-belt will remain upon the fast pulley; but when the said rod is released and elevated to the position shown in the detached views, Figs. 4 and 5, the driving-belt will be shifted onto the loose pulley through the medium of well-known devices, which it has not been deemed necessary to illustrate or describe. The pawl or lever G, before referred to, is hung to the frame of the machine in such a position that its opposite extremities shall be adjacent to the lever F and shipper-rod H. When the machine is in operation the threads x in their passage from the spools to the warp-beam X pass over the bar B, as indicated by the arrow 1 in Fig. 1, and the cam-wheel L imparts a vibrating movement to the lever M, which is transmitted through the link d to the lever F, the latter being locked to the arm P by the spring-extension P', and consequently transmitting the same movement to the rock-shaft S, its arms S', and the rod A, the motion of the latter being unobstructed so long as the suspended wires D are held up by the threads. Should one of the latter break, however, as represented at x' , Fig. 1, its wire D will drop into the path of, and stop the movement of, the oscillating rod A, and this will also prevent the movement of the arms S', rock-shaft S, the arm P, and its spring-extension P'. As the lever F, however, is directly under the control of the cam-

wheel and lever M, it must still continue to vibrate, but its fulcrum will be shifted to the point *a*, which will cause the spring P' to be withdrawn from the notch *e'* in the upper extremity of the said lever, and its lower extremity to strike either the shipper-rod H or the lever G, according to the direction of the movement, either having the effect of releasing the said shipper-rod, as shown in Figs. 4 and 5, and of thus shifting the belt onto the loose pulley, and of instantaneously stopping the motion of the machine. If a thread breaks while the rod A is moving in the direction of the arrow 2, Fig. 1, the lever F will strike and operate the shipper-rod directly, as shown in Fig. 4; but if the rod A strikes the fallen wire when moving in the reverse direction, as indicated by the arrow 3, the lever F will strike the lever G, as shown in Fig. 5, which will in turn release the shipper-rod.

I claim as my invention—

1. The combination of the shipper-rod H of a warping-machine with a lever, F, hung to the vibrating arm P at *a*, and admitting of being locked thereto, and to which a positive movement is imparted, all substantially as and for the purpose specified.

2. The arm P on the rock-shaft S, and its spring-extension P', in combination with the lever F, hung to the outer extremity of the said arm, and having a notch, *e'*, adapted for the reception of the said spring-extension.

3. The combination, substantially as described, of the lever G with the shipper-rod H and lever F.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS C. ENTWISTLE.

Witnesses:

JOHN B. COTTON,
CHARLES B. READE.